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ADVISORY CIRCULAR

MAINTENANCE INSPECTION NOTES FOR CONVAIR MODELS 240 AND
600/240D; MODELS 340/440 AND 640/340D/440D SERIES AIRCRAFT

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DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

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DEPARTMENT OF TRANSPORTATION FEDERAL AVIATION ADMINISTRATION

* **SUBJECT:** MAINTENANCE INSPECTION NOTES FOR CONVAIR MODELS 240 AND
600/240D; MODELS 340/440 AND 640/340D/440D SERIES AIRCRAFT *

1. **PURPOSE.** This handbook describes maintenance inspection notes which
* can be used for the maintenance support of certain structural parts
of Convair 240 and 600/240D; Models 340/440 and 640/340D/440D series
aircraft. *
2. **DESCRIPTION.** Maintenance on the wing, fuselage, and empennage struc-
ture is reviewed with a view toward supplementing information current-
ly available.
3. **HOW TO GET THIS PUBLICATION.**
 - a. Order additional copies of this publication from:

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 - b. Identify this publication as: Advisory Circular 20-59 -
* Maintenance Inspection Notes for Convair 240, 600/240D,
340/440, and 630/340D/440D Series Aircraft. *

A handwritten signature in black ink, reading "C. R. Melugin, Jr.", is written over the typed name.

C. R. MELUGIN, JR.
Acting Director, Flight Standards Service

TABLE OF CONTENTS

	<u>Page No.</u>
1. Introduction	1
2. Description	1
3. Background	1
4. General Information	1
5. Type of Construction	2
6. General Inspection Tips	2
7. Nondestructive Testing (NDT)	3
 APPENDIX 1 STATION CHARTS (2 pages)	
Figure A-1 Wing Stations	1
Figure A-2 Fuselage Stations	2
 APPENDIX 2 FUSELAGE COMPONENTS (5 pages)	
Figure B-1 Fuselage Major Components	1
Figure B-2 Fuselage Nose Section	2
Figure B-3 Fuselage Cabin Section	3
Figure B-4 Fuselage Tail Section	4
Figure B-5 Fuselage Stringer Diagram	5
 APPENDIX 3 WING COMPONENTS (5 pages)	
Figure C-1 Wing Components	1
Figure C-2 Wing Leading Edge Structure	2
Figure C-3 Wing Inter-Spar Structure	3
Figure C-4 Wing Tailing Edge Structure	4
Figure C-5 Wing Tip Structure	5
 APPENDIX 4 MAINTENANCE INFORMATION (9 pages)	1
 * APPENDIX 5 MODEL 240 AND 600/240D (STC # SA 1054 WE) SERIES AIRCRAFT (5 pages)	1
 APPENDIX 6 MODEL 340/440 AND 640/340D/440D (STC # AS 1096 WE) SERIES AIRCRAFT (6 pages)	1

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1. INTRODUCTION. This advisory circular provides maintenance information which can be used by mechanics, repair agencies, owners, and operators in developing maintenance programs, making improvements in existing programs, and conducting inspections and repairs on certain structural parts of Convair 240, 340/440, 240T, and 340T airplanes. The material is based, in part, upon information made available through discussions with personnel who have maintained these types of airplanes for thousands of hours of time in service. The intent of the circular is to impart some of this knowledge to other interested persons so that it is not lost.
2. DESCRIPTION. The circular contains guidance material for performing maintenance on wing, fuselage, and empennage structure. The information has been derived from service experience. It does not comprise a full and complete maintenance program for the subject aircraft but should be considered as supplemental maintenance data. Included in the circular are diagrammatic sketches and station identifications of the wing and fuselage. In addition, there is a listing of selected maintenance difficulties which have been reported since 1964.
3. BACKGROUND.
 - a. Aircraft Use. The agency has realized that several different types of transport aircraft are being phased out of service by some airlines because of the availability of newer equipment. Such older aircraft are being purchased by other operators who may not be familiar with the scope of required maintenance and the means which have been used to keep the aircraft in a safe condition.
 - b. Maintenance "Know How." Since maintenance "know how" is not transferred with the aircraft, the new operator generally goes through a learning cycle before he is able to rapidly pinpoint the important/critical problem areas of the aircraft. In this respect, identification of known areas where structural problems have been experienced will help in the preparation of an initial maintenance program by a new operator. It also can serve as a guide to other operators who have not accumulated sufficient service experience to have knowledge of all the problem areas of the aircraft.
4. GENERAL INFORMATION.
 - a. Manufacturer's Bulletins. It must be emphasized that the manufacturer has published several service bulletins concerning the inspection, repair, and modification of Convair 240, 340/400, 240T, and 340T aircraft. Service bulletins highlight the importance of maintaining structural integrity on aircraft with particular reference to areas known to have experienced crack and corrosion damage. Operators are urged to become conversant with the manufacturer's recommendations and make certain that responsible maintenance personnel are knowledgeable on this subject.

- b. Airworthiness Directive. It is emphasized that the material in this circular does not supersede any of the requirements of airworthiness directives issued under Part 39 of the Federal Aviation Regulations.

5. TYPE OF CONSTRUCTION. The major structural components of the aircraft are the wing group, the fuselage group, and tail group.

- a. The full cantilever wing group consists of a center section integral with the fuselage and two removable outer panels. The outer panels include detachable tip sections and ailerons. The two-engine nacelles are bolted and riveted to the wing center section and include support beams on the outboard sides for installation of the main landing gear.
- b. The all metal semi-monocoque fuselage consists of three sections: nose section, cabin section, and tail cone section. Construction of the fuselage consists of longerons, longitudinal stringers, transverse bulkheads, formers, and support beams. The dorsal fin of beam and rib construction is riveted to the upper aft exterior surface of the fuselage along the center line.
- c. The tail group is composed of the horizontal stabilizers with hinged elevators and vertical stabilizer with hinged rudder. The vertical and horizontal stabilizers are of full cantilever design and conventional spar and rib construction.

6. GENERAL INSPECTION TIPS.

- a. Visual Inspection. The primary structure of the aircraft is designed to provide resistance to variable forces imposed while in operation by dispensing the forces through a structural pattern of "force flow" to the primary structural members of the wing and fuselage. External indications of failure, such as distorted skin, tilted or sheared rivets, and torn, dented, cracked, or corroded skin are usually obvious. Wrinkled skin, "oil cans," and tilted rivets, adjacent to the obviously failed area often indicate secondary damage caused by transmission of stress from the failed area. Misalignment of doors and panels may indicate distortion of internal structure. Internal structural damage, although not always apparent, may be found by closely examining the exterior surface. For example:

- (1) Buckled skin between rivets at the end of a stiffener or stringer could mean that the last attaching rivet has failed, or that the stiffener or stringer is buckled in the area of the skin buckle. When a detailed inspection of the failed area is to be performed, functional parts should be actuated to determine if the failure has caused binding.

- (2) Deep diagonal skin buckles, located over a frame, former, or rib could mean the member is distorted. When doubt exists concerning internal condition, the area in question should be opened and carefully inspected.

7. NONDESTRUCTIVE TESTING (NDT).

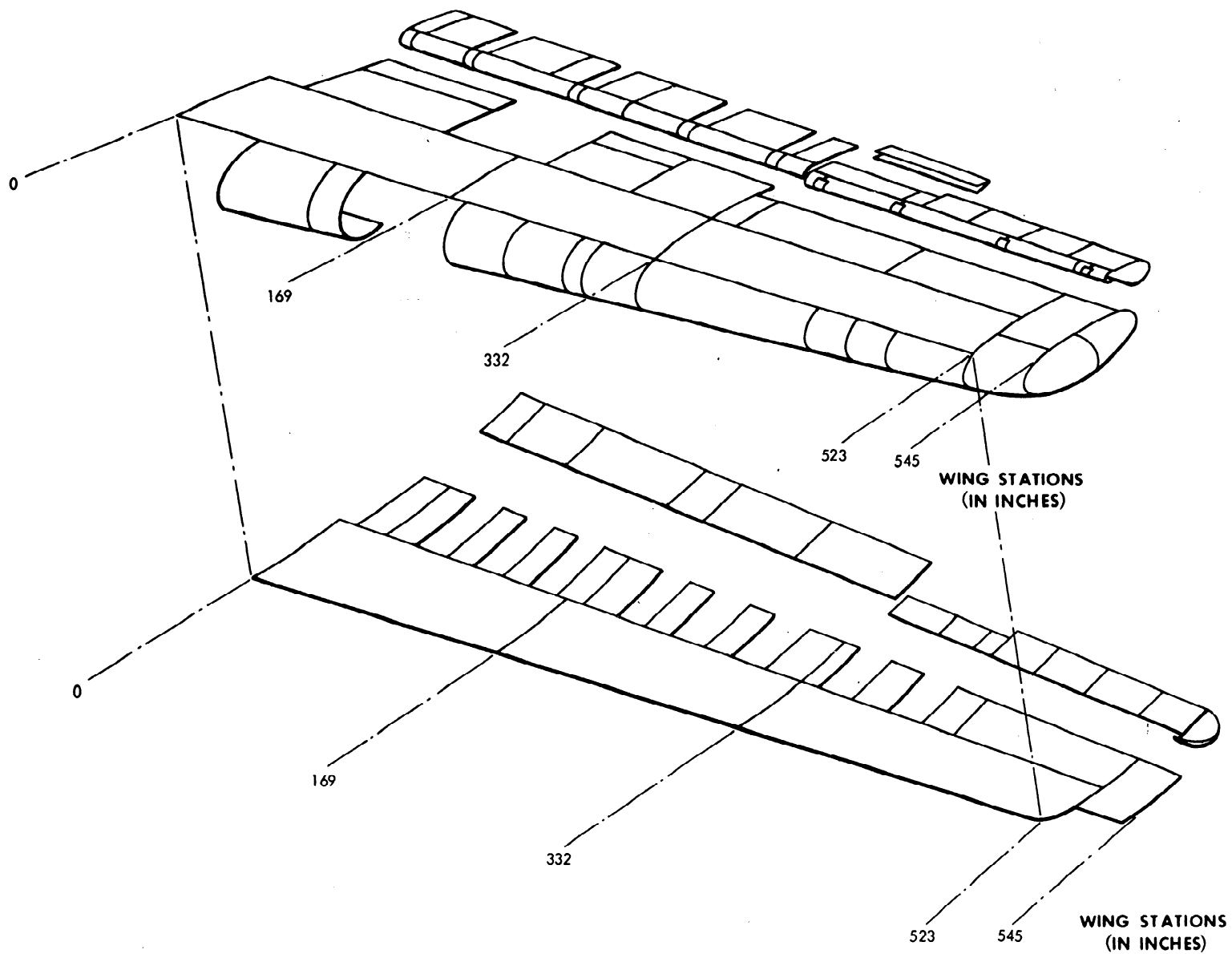
Simply stated, nondestructive testing is preventive maintenance. This includes utilization of such maintenance tools as X-ray, ultrasonic, magnetic particles, eddy current, and dye penetrant.

- a. Maintenance Inspection. NDT permits maintenance inspections without removing components from aircraft or tearing down complex assemblies. Defects in various aircraft systems which would escape detection through normal visual inspection will be identified by NDT.
- b. Training Required. Special NDT training is necessary to make sure that the operator is capable of operating the equipment and interpreting the results. Also, many states require that an X-ray operator have an approved certificate for use of X-ray in industrial applications. This is to minimize improper use with attendant health hazard of X-ray equipment.

AIRCRAFT STATION DIAGRAMS

The wing, fuselage, and empennage station diagrams included in this document were developed for the CV-340 aircraft and are used as a general reference only. Several models of each of these aircraft were manufactured and have different station locator numbers based on the particular configuration. Since the defect areas generally apply to all models of both aircraft, the referenced area can be compared with a similar area and locator on the appropriate station diagram for the particular model of aircraft.

FIGURE A-1. WING STATIONS



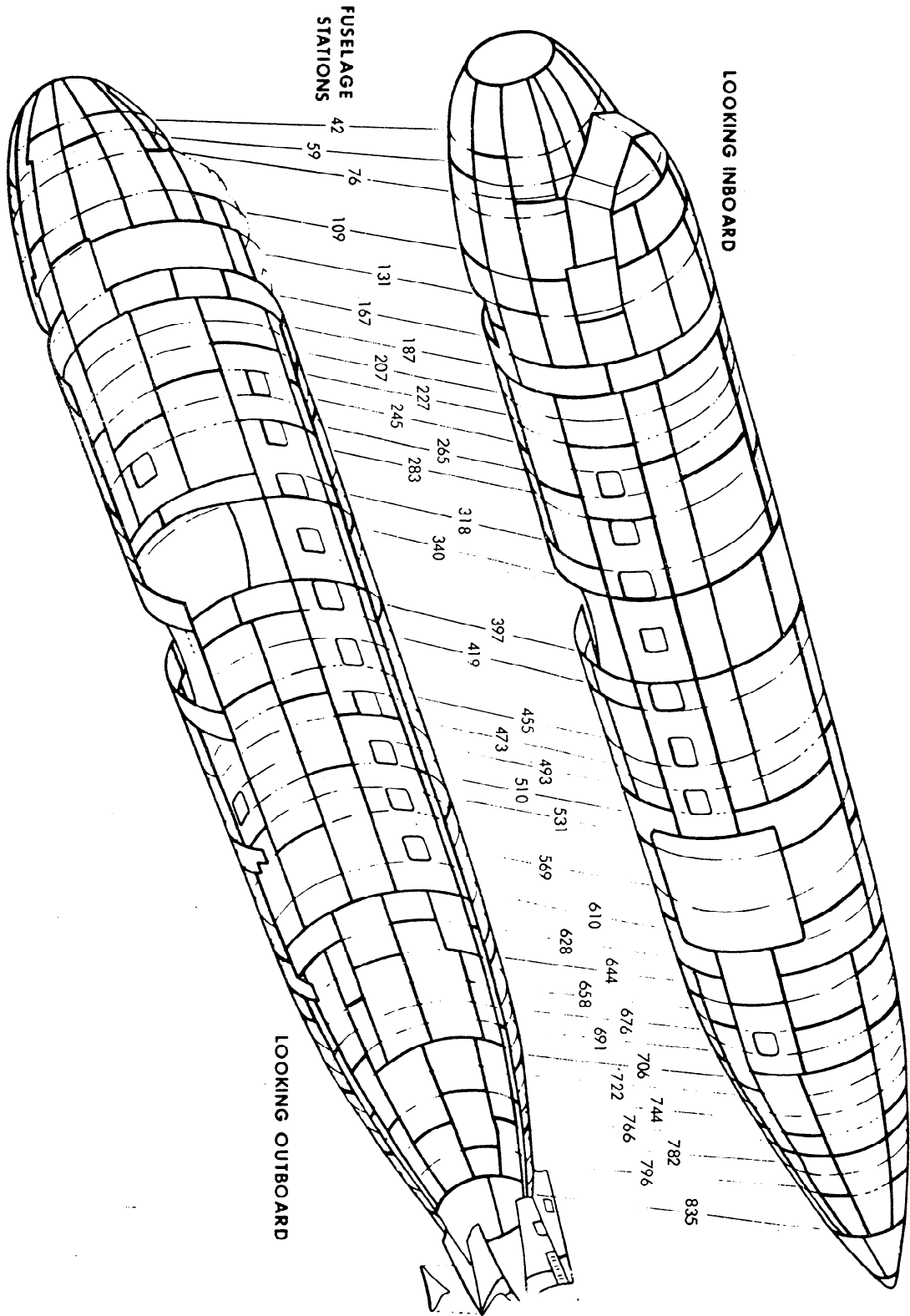


FIGURE A-2. FUSELAGE STATIONS

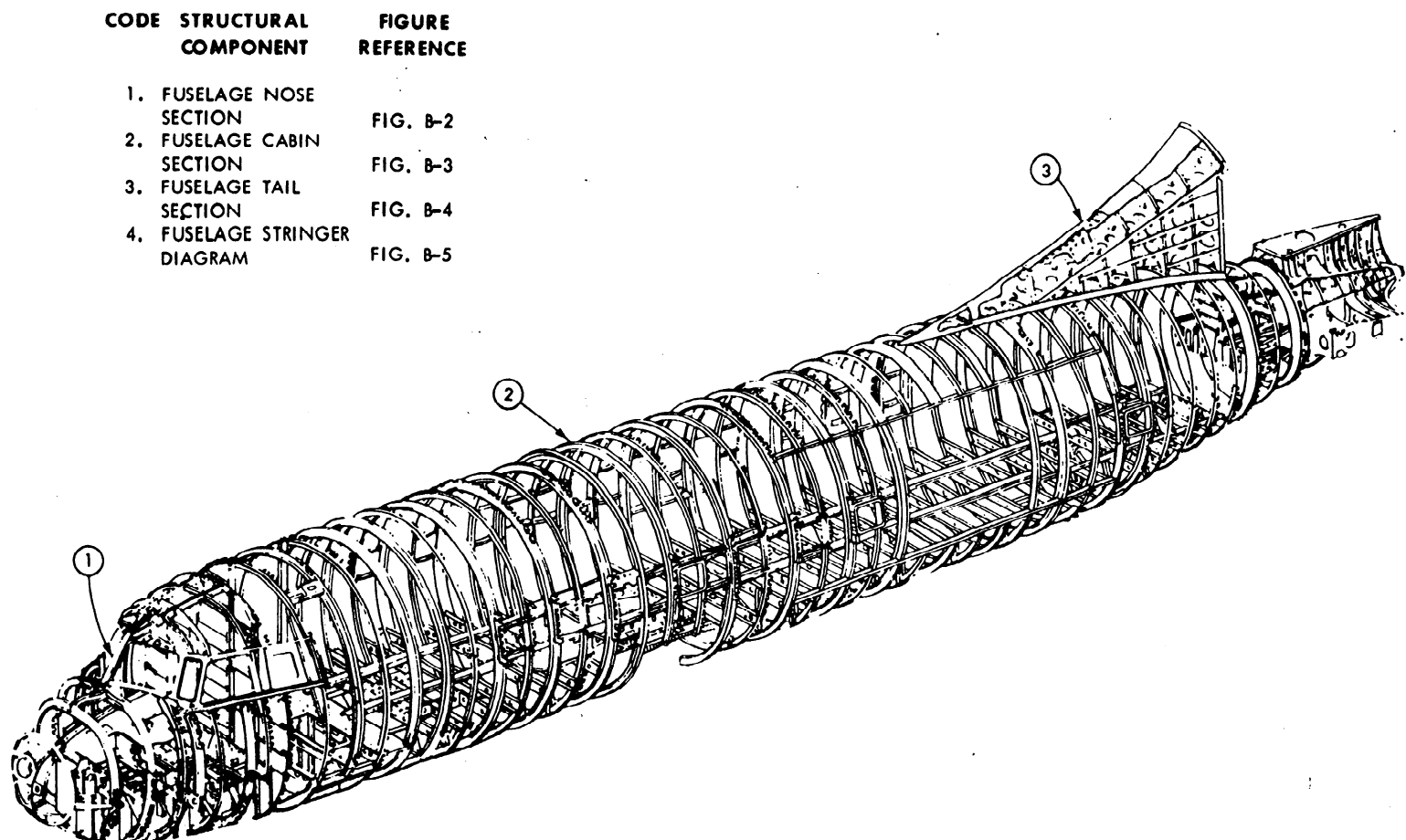
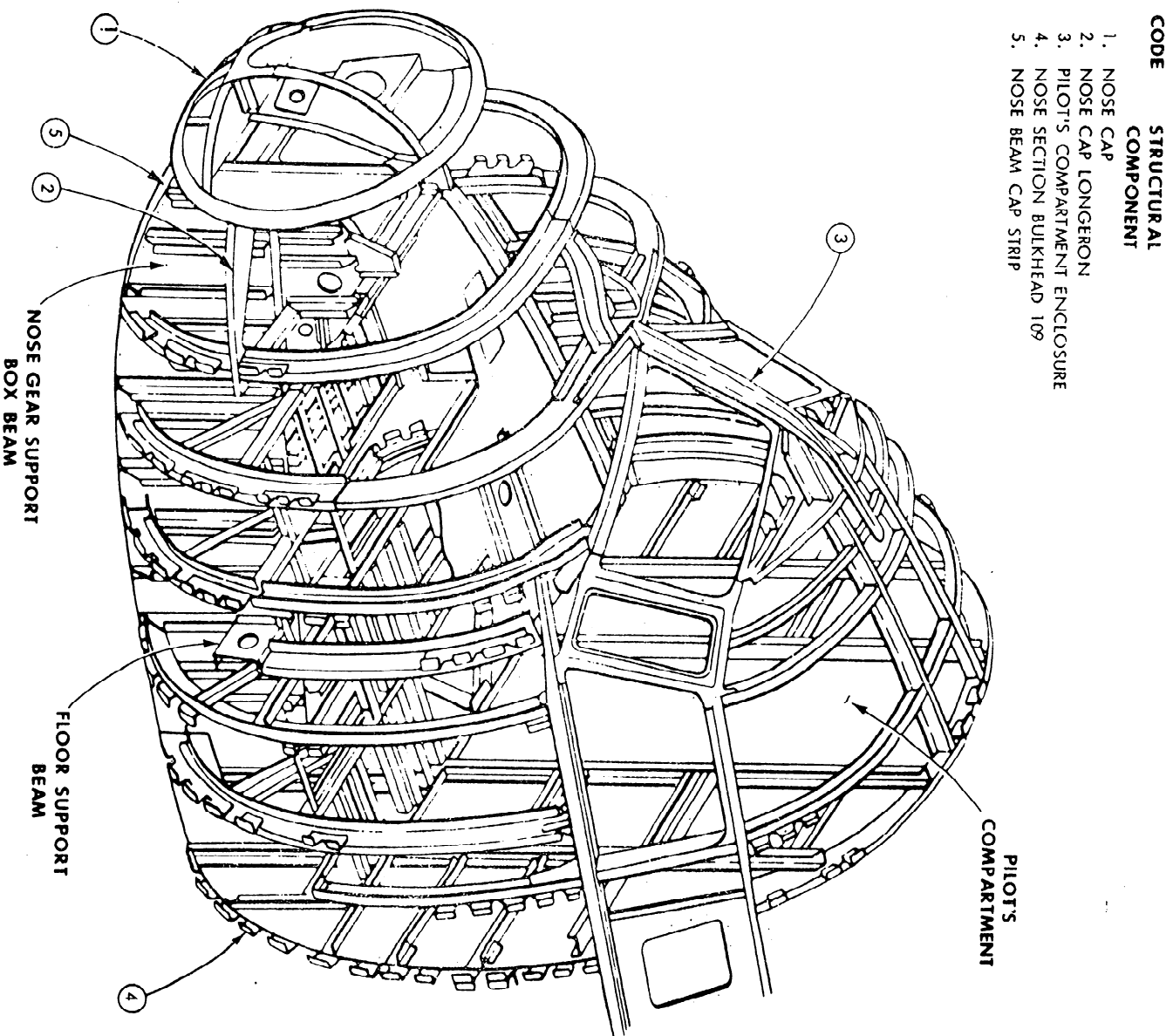
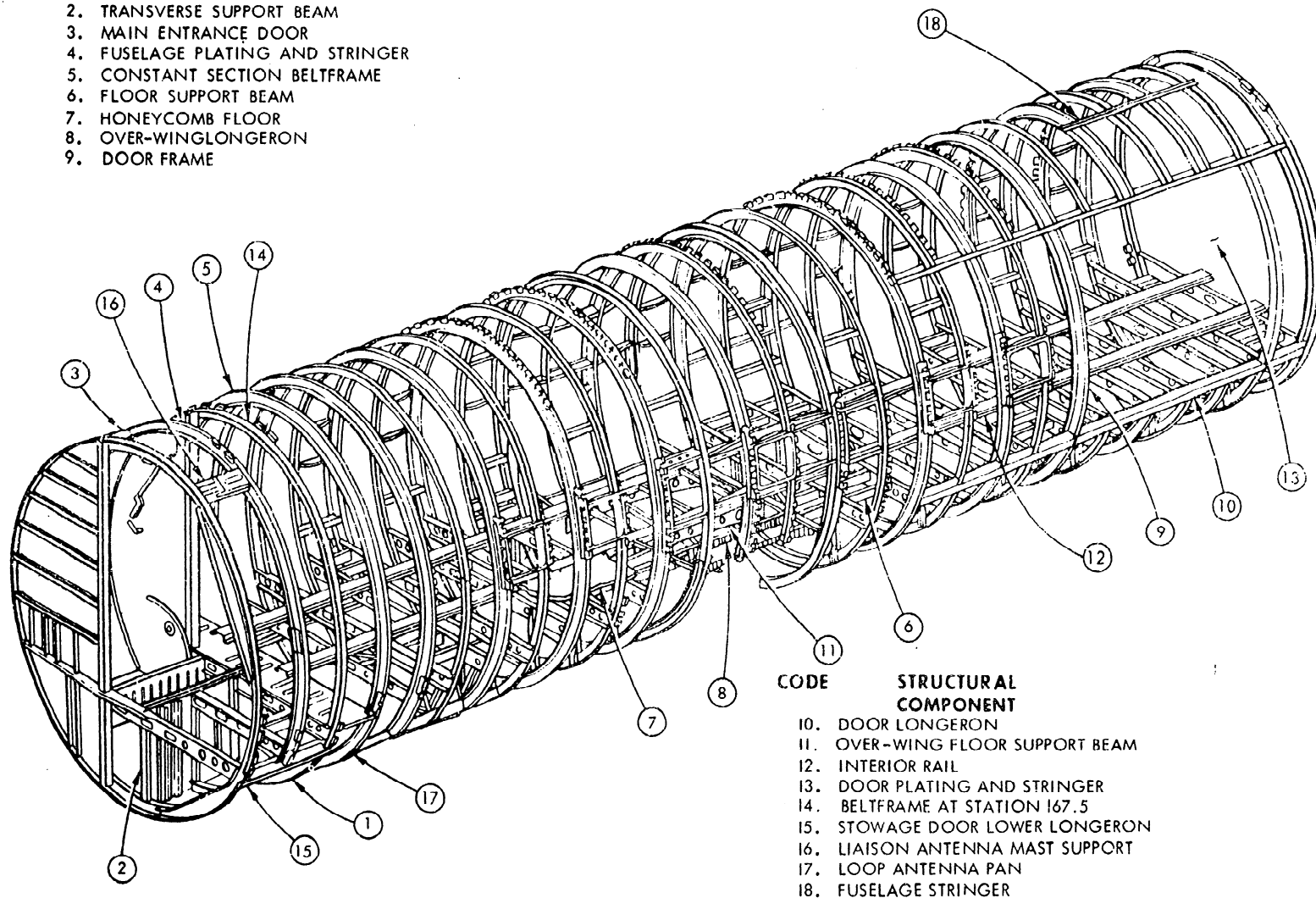


FIGURE B-1. FUSELAGE MAJOR COMPONENTS

FIGURE B-2. FUSELAGE NOSE SECTION



- | CODE | STRUCTURAL COMPONENT |
|------|-------------------------------|
| 1. | STOWAGE COMPARTMENT DOOR |
| 2. | TRANSVERSE SUPPORT BEAM |
| 3. | MAIN ENTRANCE DOOR |
| 4. | FUSELAGE PLATING AND STRINGER |
| 5. | CONSTANT SECTION BELTFRAME |
| 6. | FLOOR SUPPORT BEAM |
| 7. | HONEYCOMB FLOOR |
| 8. | OVER-WING LONGERON |
| 9. | DOOR FRAME |



- | CODE | STRUCTURAL COMPONENT |
|------|------------------------------|
| 10. | DOOR LONGERON |
| 11. | OVER-WING FLOOR SUPPORT BEAM |
| 12. | INTERIOR RAIL |
| 13. | DOOR PLATING AND STRINGER |
| 14. | BELTFRAME AT STATION 167.5 |
| 15. | STOWAGE DOOR LOWER LONGERON |
| 16. | LIAISON ANTENNA MAST SUPPORT |
| 17. | LOOP ANTENNA PAN |
| 18. | FUSELAGE STRINGER |

FIGURE B-3. FUSELAGE CABIN SECTION

FIGURE B-4. FUSELAGE TAIL SECTION

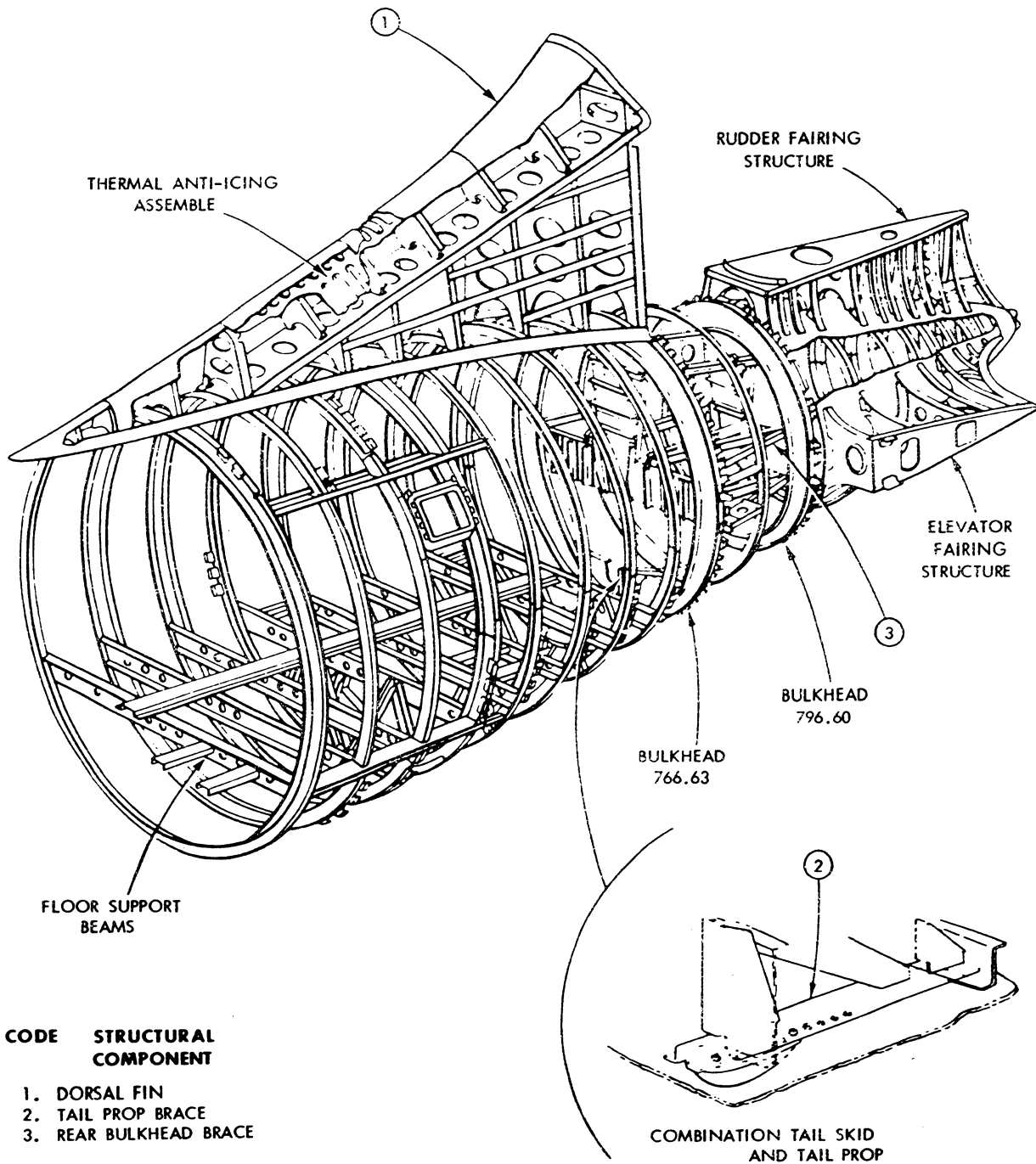
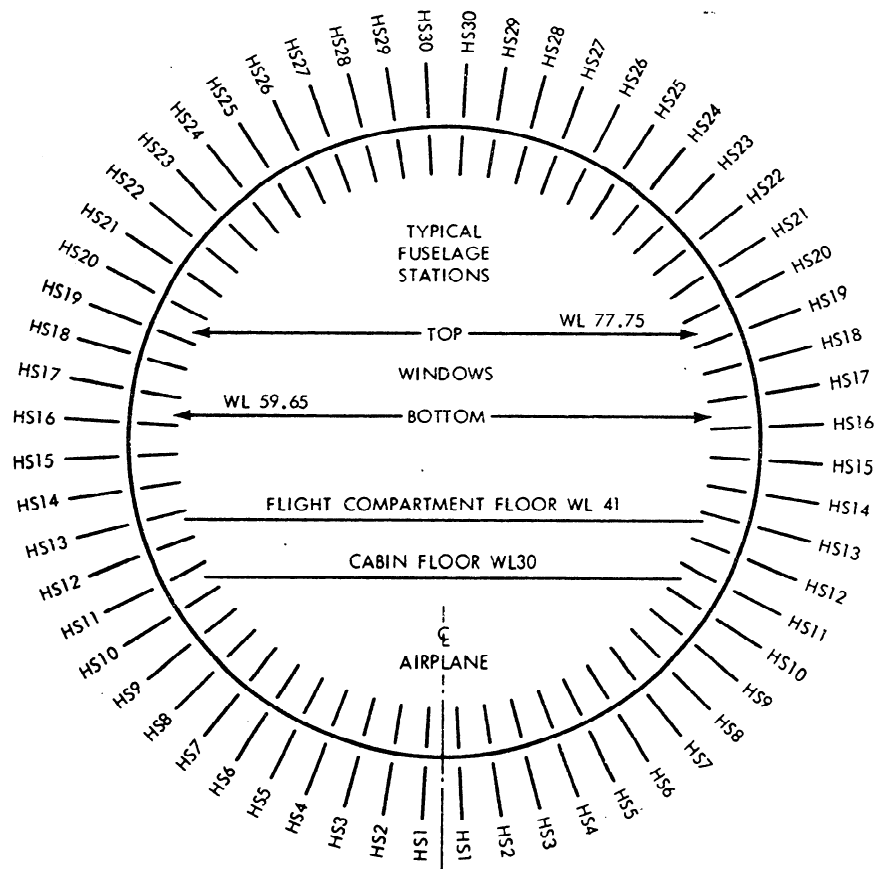


FIGURE B-5. FUSELAGE STRINGER DIAGRAM



NOTES:

1. HS INDICATES POINT ON LINE OF STRINGER HEEL.
2. ALL STRINGERS ARE MADE FROM STANDARD ROLL-FORMED SECTIONS Y36 OR Y34, OF 24ST ALCLAD MATERIAL.
3. STRINGERS AT POSITIONS 19 L/R CABIN SECTION ARE REVERSED.
4. STRINGERS AT POSITIONS 17 L/R AND 29 L/R TAIL SECTION ARE REVERSED.

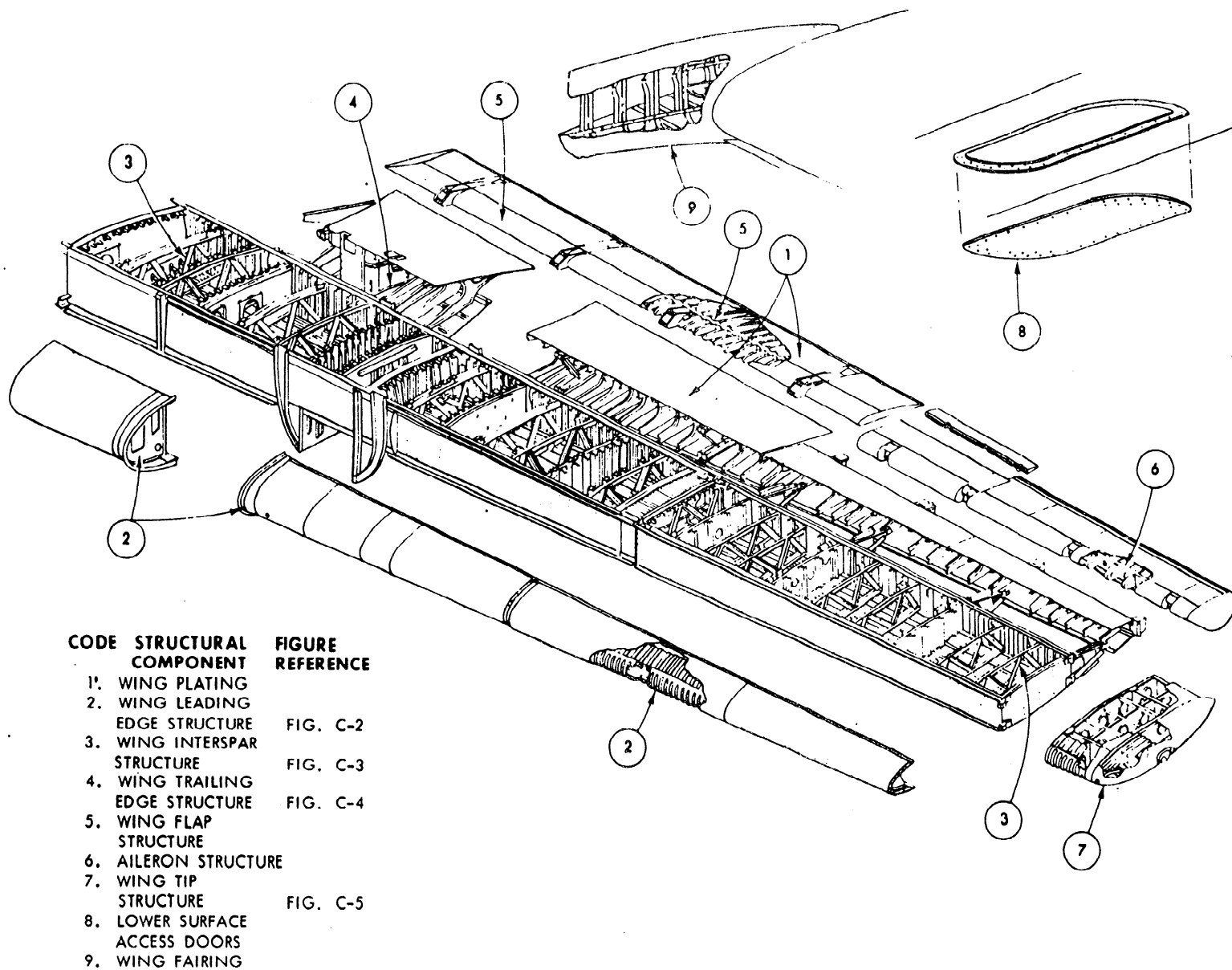


FIGURE C-1. WING COMPONENTS

CODE	STRUCTURAL COMPONENT	FIGURE REFERENCE
1.	WING PLATING	
2.	WING LEADING EDGE STRUCTURE	FIG. C-2
3.	WING INTERSPAR STRUCTURE	FIG. C-3
4.	WING TRAILING EDGE STRUCTURE	FIG. C-4
5.	WING FLAP STRUCTURE	
6.	AILERON STRUCTURE	
7.	WING TIP STRUCTURE	FIG. C-5
8.	LOWER SURFACE ACCESS DOORS	
9.	WING FAIRING	

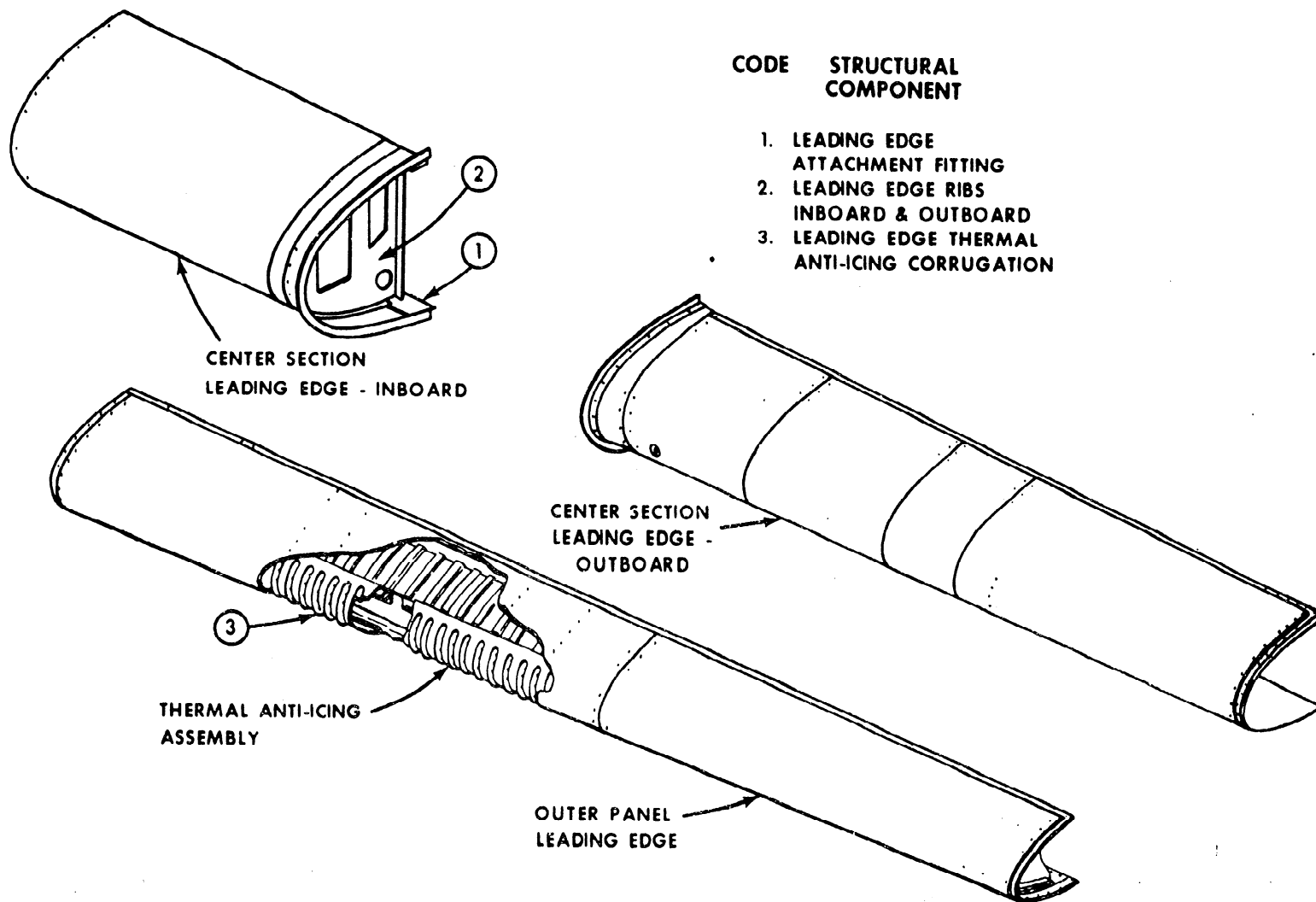
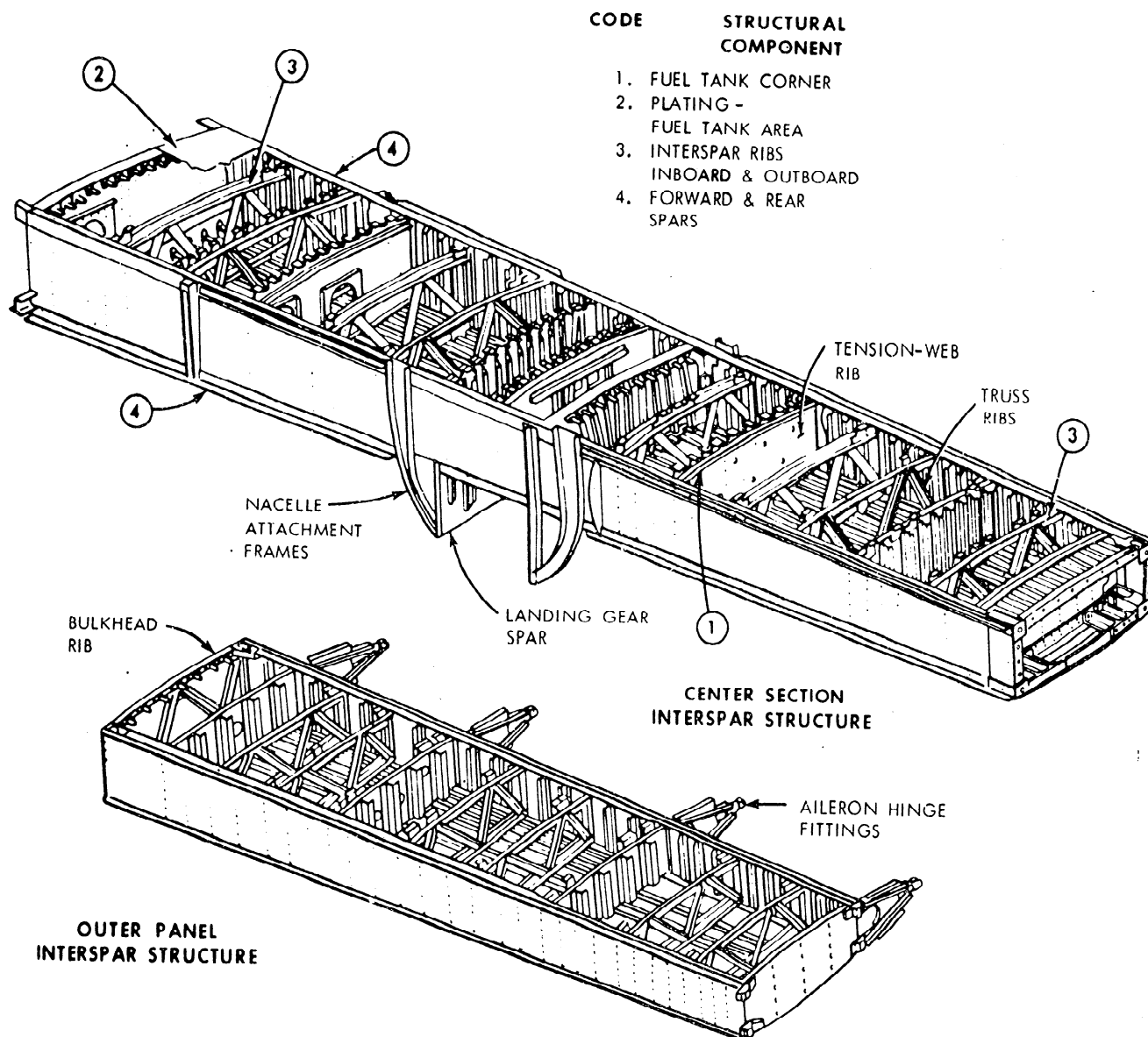


FIGURE C-2. WING LEADING EDGE STRUCTURE

FIGURE C-3. WING INTER-SPAR STRUCTURE



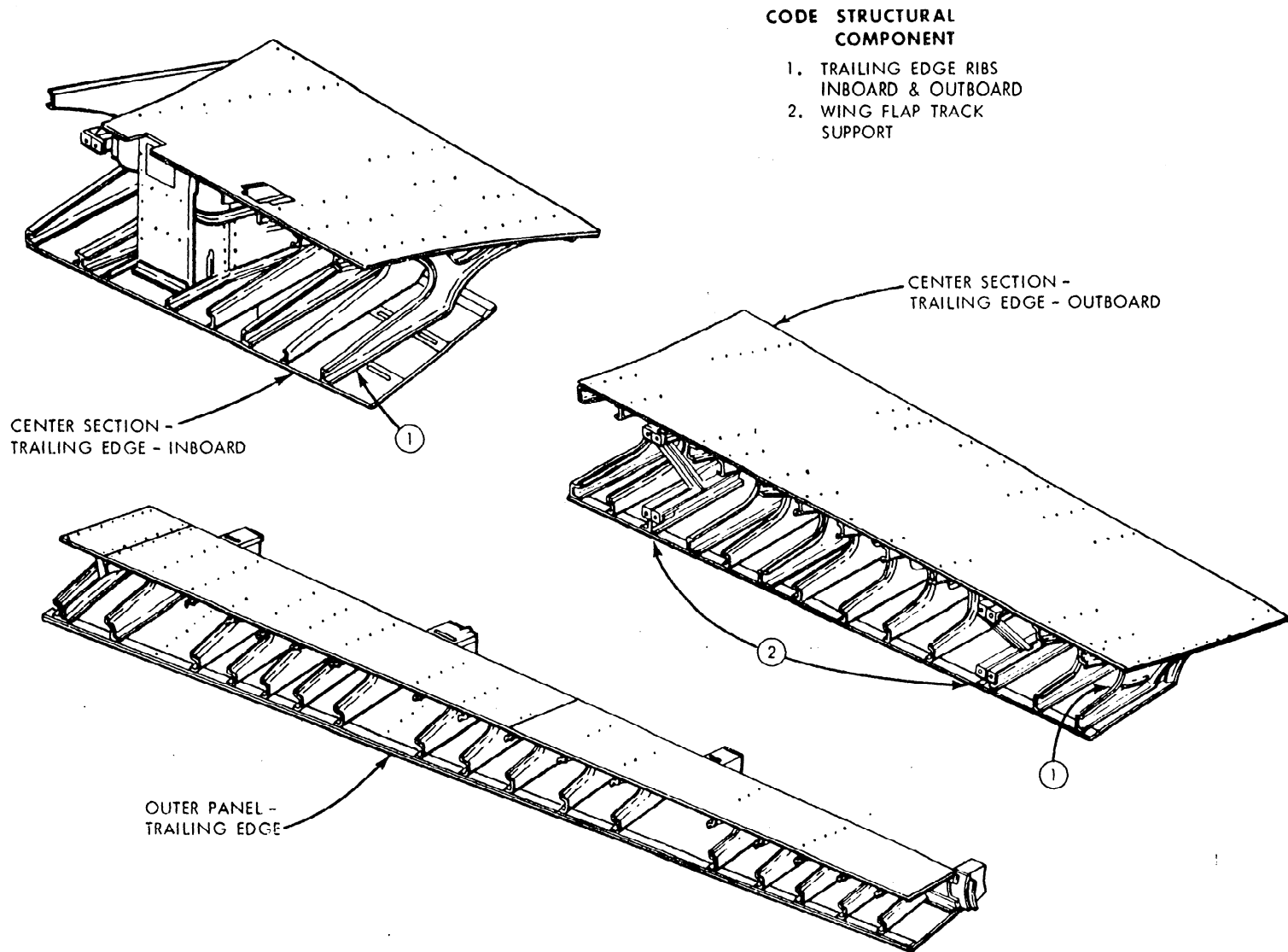


FIGURE C-4. WING TAILING EDGE STRUCTURE

FIGURE C-5. WING TIP STRUCTURE

